

TWO NEMERTEANS FROM THE RIUKIU ISLANDS

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THREE FIGURES

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About 80 years ago, 9 nemerteans were recorded by W. Stimpson (1855, 1857) from the Riukiu Islands and Kagosima, namely, *Cerebratulus nigrofuscus*=*Lineus nigrofuscus*, *Cerebratulus albobittatus*=*Lineus albobittatus*, *Lineus piperatus*, *Meckelia subacuta*=*Cerebratulus subacutus*, *Diplopleura japonica*, *Taeniosoma aequale*=*Baseodiscus quinquelineatus*, *Diplomma serpentina*, *Dichilus obscurus* and *Dicelis rubra*. Recently, through the courtesy of Mr. S. Okuda of the Hokkaido Imperial University, I had an opportunity to examine 5 specimens of nemerteans collected from the same islands in the winter of 1939. They include the following two species, *Lineus piperatus* (Stimpson) and *Prostoma spectaculum* sp. nov. The former species was also collected by the present author at Sitaru, Izu, in the early summer of 1939, while the latter was studied only on preserved specimens. Before proceeding further, I wish to tender my cordial thanks to Prof. Tohru Uchida for his constant guidance, and also to Mr. Shiro Okuda for his kindness in placing this material at my disposal.

Lineus piperatus (Stimpson)

Figs. 1, 2.

Meckelia piperata: Stimpson, 1855, p. 381.

Lineus piperatus: Stimpson, 1857, p. 16; Takakura, 1898, p. 186; Bürger, 1904, p. 95.

Two specimens were collected by Mr. S. Okuda in January, 1939 at Naha, Riukiu Islands, and preserved in alcohol. Another specimen was obtained by the present author at Sitaru, near Simoda, on June 4th, 1939.

The body is very long and filiform, 17 cm long and 0.5 mm wide, dorsally convex and somewhat flattened ventrally. The head is fairly long, rounded at the apex and divided into two parts by a constriction situated at the anterior 1/4 of the head, and is somewhat



Fig. 1. *Lineus piperatus* (Stimps.). Dorsal view of the anterior portion, $\times 30$. The constriction marks the posterior end of cephalic furrow.

broader than the oesophageal region. The body tapers towards the hind end. The caudal cirrus and ocelli are absent. The cephalic furrows are long, extending to the posterior end of the head. The proboscis opening is a minute subterminal pit and the mouth is a longitudinal slit extending backward to the level of the posterior end of the cephalic furrows. The colour of the body in life is pale yellow with green on the dorsal surface and white on the ventral. There are numerous transverse black bands irregularly notched across the dorsal surface, of which the first one is situated at the constriction of the head. A median longitudinal black band extends from the first black band to the hind end of the body crossing over with the transverse bands. Small black dots are scattered over on both dorsal and ventral surfaces. The anterior dorsal margin of the snout is white and marked with a pair of characteristic red spots on the yellow region just posterior to the white anterior margin; a red line runs backward from each of the spots along the lateral border of the body; the line is discontinuous here and there. In the preserved specimens the red markings are faded.

The integument is very thick and contains a great abundance of club-shaped gland cells filled with secretion. The cutis is not distinctly marked off from the underlying outer longitudinal muscle layer and its gland cells are almost vesiculated. The cutis of the dorsal surface contains much dark brown pigments in the portions corresponding to the markings of the dorsal surface of the body.

The proboscis contains three muscle layers without any muscle crosses. The rhynchocoel extends almost to the hind end of the body. The cephalic glands are found only at the tip of the snout and do not reach the brain. The intestine is a simple tube without pouches. The ovaries are found laterally to the intestine and their contents are not ripened in both Naha and Sitaru specimens. The nephridia are poorly developed in the anterior portion of the oesophagus, and three pairs of the efferent nephridial ducts pass through the body wall, ventrally to the lateral nerve cords, and open externally on the latero-ventral surface of the body (Fig. 2 np). The efferent nephridial duct, which opens ventrally

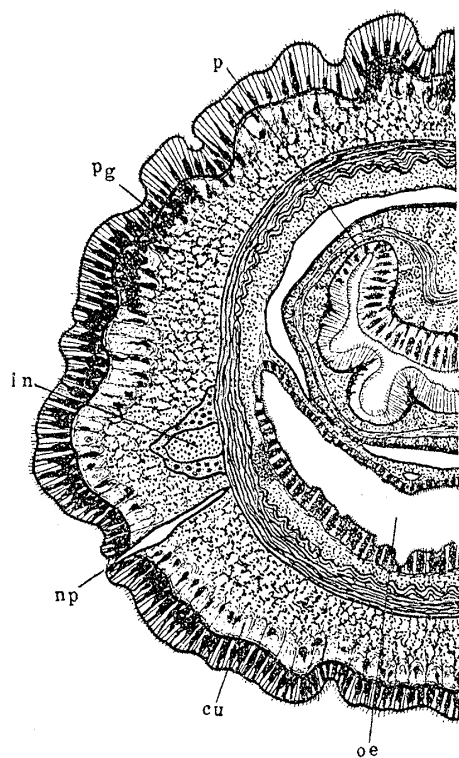


Fig. 2. *Lineus piperatus* (Stimps.). Oesophageal region, cross section. $\times 90$. cu, cutis. in, lateral nerve cord. np, external opening of efferent nephridial duct. p, proboscis. pg, pigments. oe, oesophagus.

to lateral nerve cord, has not been found in any other species of the genus *Lineus*.

The dorsal ganglion of the brain is somewhat larger than the ventral one and is divided posteriorly into two cores, of which the smaller dorsal one ends abruptly, while the larger ventral continues into the cerebral sense organ. This organ is of about the same size as one of the ventral ganglia and extends backward to the anterior portion of the mouth to be in close contact with the dorso-medial wall of the lateral nerve cord. The cerebral canal which begins at the anterior border of the cerebral sense organ communicates with the posterior end of the cephalic furrow. The oesophageal nerves are conspicuous only in the region of the mouth. The cephalic furrows do not reach the brain. In the intestinal region each

of the lateral nerve cords runs along the ventro-lateral side of the body and loosely approximated with each other in Sitaru specimen, though in Naha specimens it is situated at the lateral side of the body as usual. The frontal sense organs are found at the tip of the snout in a triangular position. The cephalic blood lacunae are very narrow and slightly broken up by muscle strands, enclosing the rhynchocoel in the brain region. The dorsal blood vessel projects into the rhynchocoel at the anterior portion of the oesophagus, but in the posterior portion it lies beneath the proboscis sheath.

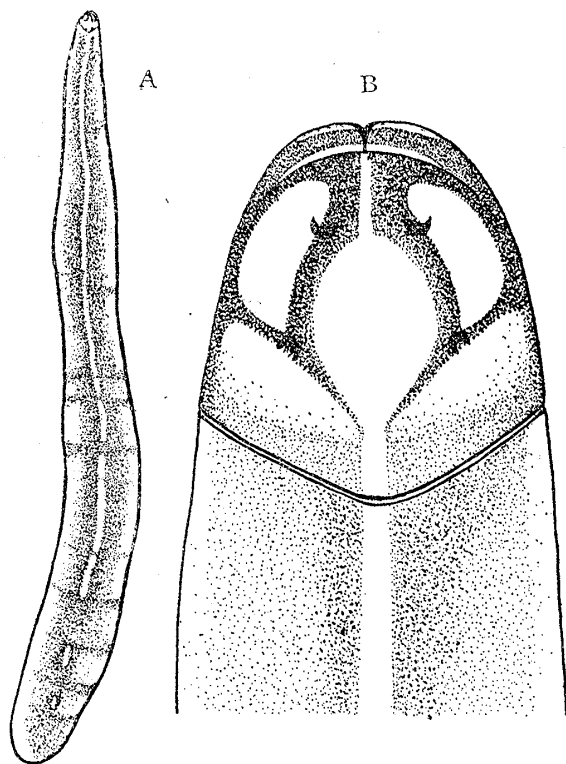
Stimpson and Takakura have observed only the superficial characters of the present species. With regard to the external features, the present specimens differ from Stimpson's material collected at Kikaisima, Riukiu Islands, only in the possession of two red dots instead of black ones on the head; it is identical to Takakura's material from Misaki and Enosima, middle Japan.

Distribution: Kikaisima, Misaki and Enosima, Japan.

Prostoma spectaculum sp. nov.

Fig. 3

Three specimens of this new nemertean were collected by Mr. S. Okuda at Naha and Tinen, Riukiu Islands, in January 1939. The largest specimen is 3 mm wide and 35 mm long, and the smallest one 1.5 mm by 20 mm. The body is flattened ventrally and somewhat vaulted dorsally. The head is rounded at the apex and not marked off from the oesophageal region. The tip of the snout is divided into two lappets, dorsal and ventral, by a horizontal fold just as observed in *Prostoma schultzei*. Two pairs of ocelli lie on the head, and the

Fig. 3. *Prostoma spectaculum* sp. nov.A, General view of body. $\times 2.5$.B, Anterior portion, dorsal view. $\times 30$.

anterior ocelli are larger than the posterior. The space between the anterior ocelli is narrower than that between the posterior. The rhynchodeal opening is a small terminal pit of the snout. A V-shaped furrow is found on the dorsal surface of the posterior end of the head. The oesophageal region becomes gradually broader towards the posterior end of the rounded body. In life the body was uniformly fleshy in colour according to Mr. S. Okuda, while in the preserved condition in alcohol it is a pale dark brown on the dorsal surface and white on the ventral. The mid-dorsal line of the body is marked

with a faint longitudinal white stripe, and the tip of the snout is painted with a spectacle-shaped pattern of dark brown colour.

The proboscis sheath reaches the posterior end of the body. Each of the accessory stylet pouches contains 2 or 3 slender stylets which are about 0.18 mm in length. Proboscis nerves are 18 in number. The intestinal caeca are divided anteriorly into 2 main canals with a few diverticula, and extend forward as far as the posterior ends

of the dorsal ganglia. The gonads are not developed. The nephridia are scattered in the parenchyma above the lateral nerve cords in the oesophageal and intestinal regions, but the efferent nephridial ducts could not be observed. The cerebral sense organs are situated immediately in front of the brain and extend posteriorly to the ventral commissure of the brain. Each of them opens externally at its anterior end by a small canal on the ventro-lateral aspect of the head. The cephalic glands are poorly developed and extend backward near the posterior region of the brain. A dorsal blood vessel branched off from the left lateral blood vessel, projects anteriorly into the rhynchocoel and shifts posteriorly to the underside of the proboscis, to run towards the hind end of the body.

The present species is characterized by its colouration of the body, especially by the occurrence of a spectacle-shaped pattern on the head, and also by the possession of a bilobed snout and 18 proboscis nerves.

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